

Report Documentation Page			Form Approved OMB No. 0704-0188	
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>				
1. REPORT DATE MAR 1976	2. REPORT TYPE	3. DATES COVERED 00-00-1976 to 00-00-1976		
4. TITLE AND SUBTITLE Anopheles Litoralis King and A. Barbirostris Group on the Island of Guam			5a. CONTRACT NUMBER	
			5b. GRANT NUMBER	
			5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)			5d. PROJECT NUMBER	
			5e. TASK NUMBER	
			5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Walter Reed Army Institute of Research, Department of Entomology, Washington, DC, 20012			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT				
15. SUBJECT TERMS				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 2
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	19a. NAME OF RESPONSIBLE PERSON	

ANOPHELES LITORALIS KING AND A.
BARBIROSTRIS GROUP ON THE
ISLAND OF GUAM¹

R. A. WARD,² B. JORDAN,³ A. R. GILLOGLY⁴ AND
F. J. HARRISON⁵

Prior to 1970, a single anopheline, *Anopheles (Cellia) indefinitus* (Ludlow), was known from Guam (Bohart, 1957). This was presumably a post-World War II introduction as this species was first collected during March 1948 by the 207th Malaria Survey Unit, U.S. Army (Yamaguti and LaCasse, 1950). In the period 1970-1971, 6 additional species of *Anopheles* were recorded from Guam by U.S. Navy and U.S. Air Force military entomologists. These included *baezai* Gater, *lesteri* Baisas and Hu and *sinensis* Wiedemann in the subgenus *Anopheles* and *subpictus* Grassi, *tesselatus* Theobald and *vagus* Dönnitz in the subgenus *Cellia* (Holway and Bridges 1970, 1971; Reisen et al 1971a, 1971b; Darsie and Cagampang-Ramos 1972). The records of *lesteri* and *sinensis* will require further study as Harrison (1972, 1973) indicated that until his re-examination of the type series of *sinensis* and designation of a lectotype, considerable doubt existed on the true identity of *sinensis* and related taxa.

In May 1975, further collections were made by Army personnel of the 714th Medical Detachment during surveillance activities at the onset of Operation New Life—the program involving the use of Guam as a transit area for Vietnamese nationals prior to their entry to the United States.

On May 22, 1975 an undetermined female anopheline was collected at the Rojas Sports Arena, Naval Station, Guam in a CDC light trap baited with dry ice. This was submitted to the Medical Entomology Project for identification and was determined to be a member of the *A. (A.) barbirostris* species group, previously unre-

corded from Guam. Additional single female specimens were found on May 27, 1975 by military entomology surveillance programs in a CDC light trap located 200 yards from the site of the initial collection and in a New Jersey light trap on October 10, 1975 in the Apra Heights housing area. This last site is within a mile of the original collection sites.

The *barbirostris* group consists of 11 species and was previously restricted to the Oriental region except for one species on Western New Guinea (Harrison and Scanlon 1975). Three members of the group, *barbirostris* Van der Wulp, *campestris* Reid and *donaldi* Reid are known to be vectors of malaria and/or filariasis in Southeast Asia. Since the adult females are so variable in the group, positive identification to species cannot be made without associated immature stages. It should be pointed out that adult *barbirostris* are very similar to *campestris* and that only 80-85% of the adults can be reliably separated.

In an attempt to locate the breeding site(s) of the above species, the U.S. Navy Environmental Health Service has made additional surveys on Guam. During July 1975, 3 of the 15 larval collections made disclosed the presence of a second unrecorded species, *A. (C.) litoralis* King. This species was present in 2 collections from artificial containers in an old dump by the Bachelor Officers' Quarters at Ororo Point and 1 collection from an oil drum at the junction above the NCS Beach. These 3 collections were all accompanied by reared adults of both sexes with associated larval and pupal pelts.

A. litoralis has previously been reported from the Philippines and may possibly occur in Sabah, Malaysia (Reid 1968). It has been incriminated as a vector of both vivax and falciparum malaria in Pangutaran Island, Sula Archipelago, Philippine Islands (Cabrera, Ramos and Cruz, 1970) and may be of importance on other islands in the Philippines where malaria is present but *A. (C.) minimus flavirostris* (Ludlow) is absent.

Reference specimens have been deposited in the collections of the U.S. National Museum.

ACKNOWLEDGMENTS. We wish to thank E. L. Peyton and Major Bruce A. Harrison for their assistance.

References Cited

- Bohart, R. M. 1956 (1957). Insects of Micronesia Diptera: Culicidae. Insects of Micronesia, B. P. Bishop Museum 12(1):1-85.
- Cabrera, B. D., O. L. Ramos and I. T. Cruz. 1970. Malaria transmission by *Anopheles litoralis* King, a salt water breeder, in Pangutaran, Sula, Republic of the Philippines. Philippine Med. Assoc. J. 46:443-455.
- Darsie, R. F., Jr. and A. Cagampang-Ramos. 1972. Descriptions and keys for anophelines of Guam. Mosquito News 32:16-22.
- Harrison, B. A. 1972. A new interpretation of
- ¹ Portions of this work were conducted at the Medical Entomology Project, Smithsonian Institution, Washington, DC and supported by Research Contract No. DA-MD-17-74-C-4086 from the U.S. Army Medical Research and Development Command, Office of the Surgeon General, Washington, DC.
- ² Department of Entomology, Walter Reed Army Institute of Research, Washington, DC 20012.
- ³ Chief Hospital Corpsman, Environmental Health Service, U.S. Naval Regional Medical Center, FPO San Francisco, CA 96630.
- ⁴ Captain, MSC, U.S. Army Environmental Hygiene Agency, Entomology Branch, Fort McPherson, GA 30330.
- ⁵ Captain, MSC, Department of Entomology, University of Illinois, Urbana, Ill. 61801.

- affinities within the *Anopheles hyrcanus* complex of Southeast Asia. Mosquito Syst. 4:73-83.
- Harrison, B. A. 1973. A lectotype designation and description for *Anopheles (An.) sinensis* Wiedemann 1828, with a discussion of the classification of this and some other Oriental *Anopheles*. Mosquito Syst. 5:1-13.
- Harrison, B. A. and J. E. Scanlon. 1975. Medical entomology studies—II. The subgenus *Anopheles* in Thailand (Diptera: Culicidae). Contrib. Am. Entomol. Inst. (Ann Arbor) 12(1):1-307.
- Holway, R. T. and J. R. Bridges. 1970. Illustrated key to the adult mosquitoes of the Marianas. U.S. Navy Prev. Med. Unit 6, FPO San Francisco 96610, pp. 1-8. (Change 1, 1971, pp. 1-2).
- Reid, J. A. 1968. Anopheline mosquitoes of Malaya and Borneo. Stud. Inst. Med. Res. Malaya 31:1-520.
- Reisen, W. K., J. P. Burns and R. G. Basio. 1971a. Distribution and abundance of mosquitoes on USAF installations in Asia for 1970. 1st Med. Serv. Wing (PACAF), 40 p.
- Reisen, W. K., J. P. Burns and R. G. Basio. 1971b. A mosquito survey of Guam, Marianas Islands. 1st Med. Serv. Wing (PACAF), 30 p.
- Yamaguti, S. and W. J. LaCasse. 1950. Mosquito fauna of Guam. Office of the Surgeon, Hq. 8th Army, APO 343, 101 p.